

Application Notes

hp StorageWorks Business Copy EVA/MA/EMA 2.3 Using BC with Continuous Access EVA and Data Replication Manager

Product Version: 2.3

Second Edition (September 2004)

Part Number: T3032-96208

This HP StorageWorks Business Copy (BC) for Enterprise Virtual Array (EVA), Modular Array (MA), and Enterprise Modular Array (EMA) document summarizes the considerations when using BC with HP StorageWorks Continuous Access EVA and HP StorageWorks Data Replication Manager (DRM).

For the latest version of these Application Notes and other BC documentation, visit the BC product web site at:
<http://h18000.www1.hp.com/products/storage/software/bizcopyeva/index.html>.



© Copyright 1999–2004 Hewlett-Packard Development Company, L.P.

Hewlett-Packard Company makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Hewlett-Packard shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

This document contains proprietary information, which is protected by copyright. No part of this document may be photocopied, reproduced, or translated into another language without the prior written consent of Hewlett-Packard. The information contained in this document is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Hewlett-Packard Company shall not be liable for technical or editorial errors or omissions contained herein. The information is provided "as is" without warranty of any kind and is subject to change without notice. The warranties for Hewlett-Packard Company products are set forth in the express limited warranty statements for such products. Nothing herein should be construed as constituting an additional warranty.

Business Copy EVA/MA/EMA 2.3, Using BC with Continuous Access EVA and Data Replication Manager
Application Notes
Second Edition (September 2004)
Part Number: T3032–96208

About this document

This document describes considerations for using Business Copy (BC) v2.3 with Continuous Access EVA and BC v2.0 or later with Data Replication Manager (DRM).

This section describes the content reflected in this document, including:

- [Application Notes information](#), page 3
- [Intended audience](#), page 3
- [Other documentation](#), page 3

Application Notes information

These Application Notes cover the following major topics:

- [BC-CA EVA Overview](#), page 4
- [Using BC in Continuous Access EVA environments](#), page 5
- [Configuring BC in DRM environments](#), page 12

Intended audience

This document is intended for anyone using BC in Continuous Access EVA or DRM environments.

Other documentation

Access technical documentation from the following:

- For BC:
 - BC Documentation CD for customers who purchased a BC product kit.
 - BC product web site, visit <http://h18000.www1.hp.com/products/storage/software/bizcopyeva/index.html>.
- To provide feedback on BC features, functionality, or documentation, send e-mail to: BCFeedback@hp.com.
- For Continuous Access EVA and DRM, visit <http://h18006.www1.hp.com/products/storage/software/conaccesseva/index.html>.
- For HP StorageWorks Command View EVA, visit <http://h18006.www1.hp.com/products/storage/software/som/index.html>.

BC-CA EVA Overview

Using BC with Continuous Access EVA provides flexible solutions to achieve business continuity, including disaster recovery and prevention. BC provides replication by creating *point-in-time* copies of a virtual disk on the same storage system as the source. These point-in-time copies, known as Business Continuance Volumes (BCVs), use the snapshot and snapclone technology of EVA storage systems.

Continuous Access EVA provides replication by creating *real-time, ongoing* copies (commonly called remote mirrors) of virtual disks on a different storage system than the source. Typically, these storage systems are located at different facilities or sites. To perform the mirroring, Continuous Access EVA uses EVA Virtual Controller Software (VCS) remote replication features.

BC-DRM compatibility

BC is compatible with DRM, meaning that both BC and DRM can co-exist in the same MA/EMA storage system environment when BC is properly configured. See “[Configuring BC in DRM environments](#)” on page 12 for BC-DRM configuration requirements.

DRM uses remote replication features provided by BC through supported HSG80 Array Controller Software (ACS) versions.

Prerequisites

This document assumes that a working BC network exists, which is also part of a Continuous Access EVA or DRM environment. If *both* Continuous Access EVA and DRM configurations are used in the same SAN, each configuration must be managed in different zones. For instructions on how to zone these configurations to be independent of each other, refer to Continuous Access EVA and DRM documentation.

Using BC in Continuous Access EVA environments

This section describes considerations for configuring BC in Continuous Access EVA environments. Topics include:

- [Requirements and support](#), page 5
- [Supported Continuous Access EVA configurations](#), page 5
- [Planning for disaster recovery](#), page 7
- [Planning a BC environment: What you should know](#), page 8

Requirements and support

[Table 1](#) describes requirements and support for using BC with Continuous Access EVA.

Table 1: BC-Continuous Access EVA requirements and support

Topic	Requirement
BC	v2.3
Continuous Access EVA	v1.1b or v1.2
BC jobs	<p>The <code>SET CA SUBSYSTEM</code> operation must be used in BC jobs to specify the EVA storage system associated with the replicated storage volume. Omitting this operation causes the BC job to fail at validation.</p> <p>Refer to the BC Online Help & User Guide for more information on this operation.</p>

Supported Continuous Access EVA configurations

[Figure 1](#), [Figure 2](#), and [Figure 3](#) illustrate supported BC configurations in Continuous Access EVA environments. Each *BC server platform*¹ can be either a Storage Management Appliance (SMA) or Storage Management Server (SMS). Refer to the *HP StorageWorks Business Copy EVA/MA/EMA 2.3 Network Administration Guide* (T3032–96301) for BC server platform requirement details.

Note: The BC server platform at the source and destination sites can be a mixture between the SMA and SMS. However, HP recommends using one hardware type for each CA EVA configuration (source and destination sites) due to hardware imaging failover issues.

For information on configuring active and standby BC server platforms:

- For SMA, refer to the *HP OpenView Storage Management Appliance Software Using Multiple Storage Management Appliances in a SAN Application Notes*.
- For SMS, refer to the *HP StorageWorks Enterprise Virtual Array Updating Product Software Instructions* (AA–RS29G–TE).

Both documents are available on the SMA product web site: <http://h18000.www1.hp.com/products/sanworks/managementappliance/index.html>.

1. The hardware platform where the BC server software resides.

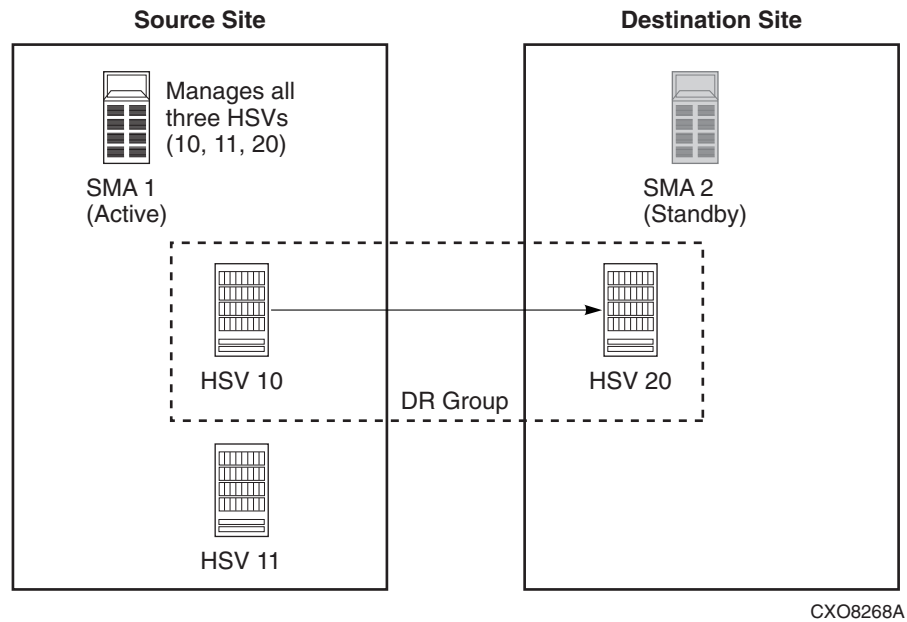


Figure 1: BC-Continuous Access EVA configuration example #1

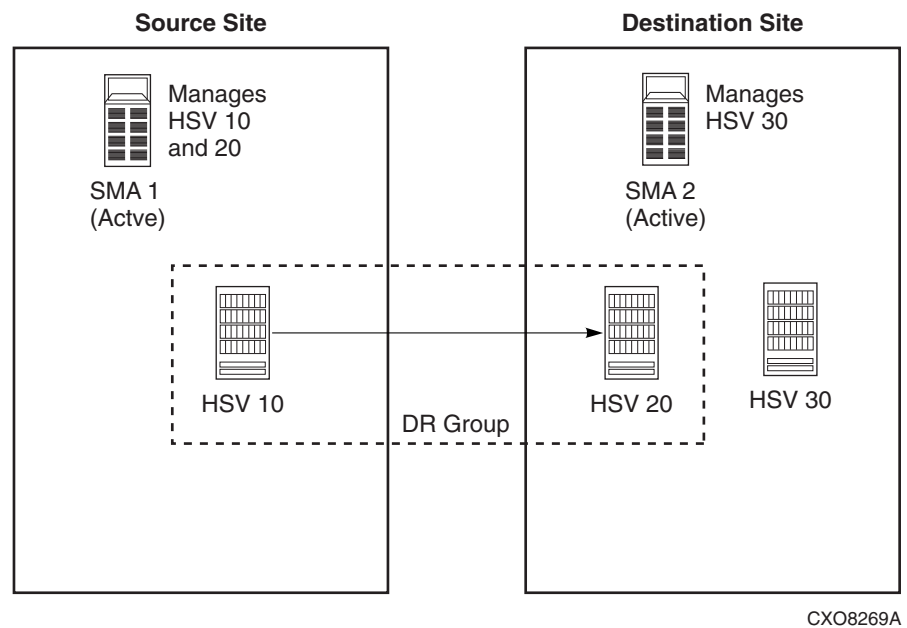


Figure 2: BC-Continuous Access EVA configuration example #2

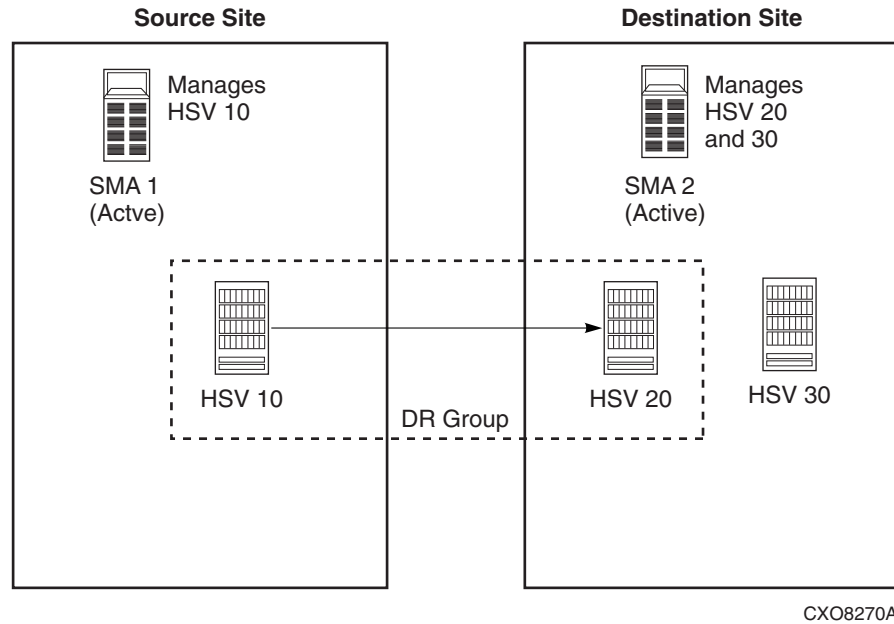


Figure 3: BC-Continuous Access EVA configuration example #3

Planning for disaster recovery

Table 2 lists BC guidelines for planning configurations with disaster recovery in mind.

Table 2: Disaster recovery configuration considerations

Topic	Considerations	Notes
BC server platform	What are the hardware platform requirements for installing BC server software?	<p>BC performs replication using EVA storage systems running VCS v3.014 or v3.020.</p> <p>Refer to the <i>HP StorageWorks Business Copy EVA/MA/EMA 2.3 Network Administration Guide</i> for hardware platform configuration requirements.</p> <p>SAN disaster recovery and prevention plans dictate where to install BC server software and whether the BC server platform should be active or standby. Remember, a standby BC server platform must be turned off until needed.</p> <p>For more information on configuring active and standby BC server platforms, refer to the applicable hardware platform or storage manager documentation.</p>

Table 2: Disaster recovery configuration considerations (Continued)

Topic	Considerations	Notes
BC-enabled hosts	In the event of a disaster, how are BC-enabled hosts handled?	<p>In the event of a disaster where the BC server platform or BC GUI is not functioning, the BC-enabled hosts need to be pointed to different storage systems. To achieve this task, two options exist:</p> <ul style="list-style-type: none"> ■ Reinstall the BC host agent software on all BC-enabled hosts, which might take a long time when many hosts are involved, or ■ Edit the <code>sb.ini</code> file on each host, which is a relatively simple task. <p>When installing BC host agent software, the host is configured to communicate with a specific BC server platform. If the BC server platform fails and another BC server platform with a different name is brought online as a replacement, the BC-enabled host cannot communicate with the new BC server platform without reconfiguring the host. To redirect the BC-enabled host to the new BC server platform, change the host <code>sb.ini</code> file <code>APPL_NAME</code> field to reflect the name of the new BC server platform. Depending on the BC network configuration, a fully qualified domain name, unqualified domain name, or an IP address may be required to begin communication with the BC server platform.</p> <hr/> <p>Tip: Prepare for a disaster by creating multiple instances of the BC <code>sb.ini</code> file that contains potential BC server platform names. Then, if a disaster occurs, one of the copies can be used to quickly replace the original BC <code>sb.ini</code> file.</p>
BC jobs	In the event of a disaster, how are BC jobs handled?	<p>If the BC server platform or BC GUI is not functioning and BC jobs need to be re-routed to an alternate BC server platform, each BC job must be modified to point to the correct storage systems.</p> <p>HP recommends proactively creating duplicate BC jobs and modifying them to point to potential alternate storage systems so that these alternate BC jobs are immediately available.</p>
BC software	In the event of a disaster, how accessible are BC software components?	<p>Plans should be in place for quick retrieval of BC software components via CD or other media. HP recommends making a backup of the BC installation CD whenever you update from one version of BC to another. This ensures that BC installations and updates can be performed quickly without downloading files again.</p>

Planning a BC environment: What you should know

This section contains important information on planning a BC environment within a Continuous Access EVA environment. Topics include:

- [Management control of BC server platforms](#), page 9
- [Using the SET CA_SUBSYSTEM operation](#), page 9
- [Replicating a virtual disk in DR groups](#), page 9
- [BC-enabled host-related BC job operations](#), page 10

Management control of BC server platforms

BC jobs require an active management link between a single BC server platform (running a linked pair of BC and Command View EVA) and the EVA storage systems to be managed. If BC jobs are running at one site and another active BC server platform takes control of the same storage systems, BC jobs at the original BC server platform site fail. Only one BC server platform can communicate with the EVA storage at any given time. Management control can be changed only by browsing to Command View EVA on an alternate active BC server platform and deliberately taking control of the storage systems (refer to Command View EVA documentation). Make a point of becoming familiar with which BC jobs are impacted by changing management control from one active BC server platform to another.

Using the SET CA_SUBSYSTEM operation

In Continuous Access EVA environments, the BC GUI displays all Continuous Access EVA resources. In a BC job that replicates volumes, the BC job must identify the specific storage system associated with the volume being replicated. The SET CA_SUBSYSTEM operation provides this capability.

Omitting the SET CA_SUBSYSTEM operation causes the BC job to fail at validation because the BC GUI has access to duplicate storage system volumes (at the source and destination sites) and does not know which storage system to replicate. The following error message indicates this type of validation error:

```
Operation uses multiple subsystems, but no matching SET CA_SUBSYSTEM found.
```

Replicating a virtual disk in DR groups

When using BC to replicate virtual disks in Data Replication (DR) groups, consider the following Continuous Access EVA recommendations and rules:

- When using Continuous Access EVA to create a DR group, HP recommends including only one virtual disk.
- An active virtual disk can have a maximum of seven snapshots.
- A DR group can contain a maximum of eight copy sets and up to eight additional non-copy set virtual disks.
A snapshot of an active virtual disk counts against the limit of seven snapshots and snapclones, not the copy set limit. (A snapshot cannot be part of a copy set.)
- When first unshared from an active virtual disk, a snapclone is not part of any DR group. To become a member, the snapclone must be manually assigned to a DR group. Refer to the Continuous Access EVA Operations Guide for manual assignment procedures.

Table 3 addresses other frequently asked replication questions.

Table 3: Frequently asked questions—Continuous Access EVA

Topic	Question	Answer
Replication	If using BC to make a replication of a source virtual disk in a DR group, does Continuous Access EVA automatically create a corresponding destination virtual disk?	No. When created by the VCS, a snapclone is not part of any DR group. Continuous Access EVA must be used to designate the replication as a source in a DR group to automatically create the corresponding destination virtual disk.
	Can BC be used to replicate the source and destination virtual disks in a DR group?	Yes. BC can be used to replicate a source or destination virtual disk, provided: <ul style="list-style-type: none"> ■ Each disk is visible to BC, and ■ The disk meets the VCS rules that allow replication. A separate BC replication operation must be used for each virtual disk.
Virtual disk availability	If the BC site virtual disk is not available, what happens to data?	Continuous Access EVA logs the data on the alternate site storage system until the BC site virtual disk becomes available. BC then automatically resynchronizes with the storage systems and updates the BC site with the data logged on the alternate site.

BC-enabled host-related BC job operations

Table 4 lists BC-enabled host-related job operations.

Note: Operations in Table 4 are not available to BC basic hosts.

Table 4: BC-enabled host-related BC job operations—Continuous Access EVA

Function	Operation	Description
Replication	NORMALIZE VOLUME	Checks the states of virtual disks that comprise a volume by specifying the host and volume name.
	SNAP VOLUME	Creates a point-in-time copy of the virtual disks, based upon selected parameters, that comprise a volume by specifying the host and volume name. Replication methods include <i>snapclone</i> (applies only to EVA) and <i>snapshot</i> .
	SET CA_SUBSYSTEM	Specifies the storage system in a Continuous Access EVA environment to use for creating a snapshot or snapclone.

Table 4: BC-enabled host-related BC job operations—Continuous Access EVA (Continued)

Function	Operation	Description
Mounting	MOUNT UNIT	Presents a unit-based BCV to the specified host and requests mounting by the host OS using the specified parameters.
	MOUNT VOLUME_ALL	Presents a volume-based BCV to the specified host and requests mounting by the host OS of all BCV components using the specified parameters. BCV components must be logical volumes.
	MOUNT VOLUME_SINGLE	Presents a volume-based BCV to the specified host and requests mounting by the host OS of one BCV component using the specified parameters. The BCV component can be an OS-defined partition, slice, disk section, or logical volume.
	UNMOUNT	Unmounts a specific volume from a host.
	SET_VOLUME_BCV	Specifies the volume to unmount. This operation can be used only with the UNMOUNT operation.
	SET_UNIT_BCV	Specifies the unit or virtual disk to mount. This operation can be used only with the MOUNT operation.
Interaction	LAUNCH	Executes an operation, batch file, or script on a specified host.
	LAUNCHUNDO	Executes an operation, batch file, or script on a specified host when undoing a BC job.
	RESUME	Executes an operation, batch file, or script on a specified host. This operation is typically used to restart database I/O halted by a SUSPEND operation.
	SUSPEND	Executes an operation, batch file, or script on a specified host. This operation is typically used to briefly halt the I/O of a database or other application running on a host.

Configuring BC in DRM environments

BC can co-exist with DRM if the BC environment is configured as described in [Table 5](#).

Table 5: BC-DRM configuration requirements and support

Component	Requirements	
BC server	BC server software must be installed on an SMA. No other BC server platform is supported for MA/EMA storage system usage. DRM management zones cannot include an SMA. The SMA containing the BC server must be in a zone separated from the DRM management zone.	
BC-enabled host	A BC-supported host with BC host agent software installed (at the target or initiator site) that has physical and logical connectivity to the MA/EMA storage systems in a BC environment.	
Data transfer mode	The DRM configuration must use synchronous transfer mode. This mode ensures that data is written to the target site disks before BC creates the BCV. Refer to the DRM Configuration Guide for information on enabling synchronous transfer mode.	
Topic	Supported	Not supported
BC	v2.0 and later	EVM v1.x
Replication	<ul style="list-style-type: none"> ■ Clone and snapshot replication of target site virtual disks ■ Clone replication of initiator site virtual disks 	Snapshot replication of virtual disks at the initiator site